

# CENTENARY OF THE DEATH

OF

# JOHN HUNTER

(October 16th, 1893)

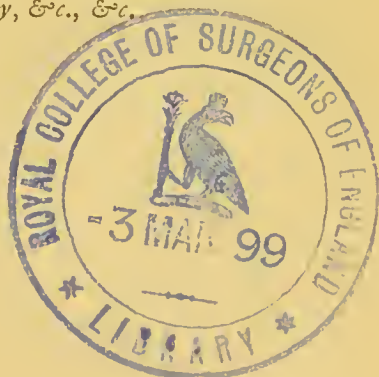
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ADDRESS DELIVERED AT NEWTON HALL

BY

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## ΤΟΞΑΡΙΣ Η ΦΙΛΙΑ.

ΜΝΗΣΙΠΠΟΣ. Τί φῆς, ὦ Τόξαρι ; θύετε Ὀρέστη καὶ Πυλάδην ὑμεῖς οἱ Σκύθαι καὶ θεοὺς εἶναι πεπιστεύκατε αὐτούς ;

ΤΟΞΑΡΙΣ. Θύομεν, ὦ Μνήσιππε, θύομεν, οὐ μὴν θεοὺς γε οἰόμενοι εἶναι, ἀλλὰ ἄνδρας ἀγαθοὺς.

ΜΝΗΣΙΠΠΟΣ. Νόμος δὲ ὑμῖν καὶ ἀνδράσιν ἀγαθοῖς ἀποθανοῦσι θύειν, ὥσπερ θεοῖς ;

ΤΟΞΑΡΙΣ. Οὐ μόνον, ἀλλὰ καὶ ἑορταῖς καὶ πανηγύρεσι τιμῶμεν αὐτούς.

ΜΝΗΣΙΠΠΟΣ. Τί θηρώμενοι παρ' αὐτῶν ; οὐ γὰρ δὴ ἐπ' εὐμενείᾳ θύετε αὐτοῖς, νεκροῖς γε οὖσιν.

ΤΟΞΑΡΙΣ. Οὐ χεῖρον μὲν ἴσως, εἰ καὶ οἱ νεκροὶ ἡμῖν εὐμενεῖς εἶεν· οὐ μὴν ἀλλὰ καὶ πρὸς τοὺς ζῶντας ἄμεινον οἰόμεθα πράξειν εἰ μεμνημένοι τῶν ἀρίστων τιμῶμεν ἀποθανόντας· ἡγούμεθα γὰρ οὕτως ἂν ἡμῖν πολλοὺς ὁμοίους αὐτοῖς ἐθελῆσαι γενέσθαι.

ΜΝΗΣΙΠΠΟΣ. Ἀλλὰ ταῦτα μὲν ὀρθῶς γιγνώσκετε.

## TRANSLATION.

MNESIPPUS. What sayest thou, Toxaris? Do you Scythians offer sacrifice to Orestes and Pylades in the belief that they are gods?

TOXARIS. Yes, Mnesippus, we do make sacrifice to them, not regarding them, it is true, as gods, but as good men.

MNESIPPUS. Is it a custom with you, then, to pay sacrificial rites to good men, after death, as if they were gods?

TOXARIS. Not only so, but we honour them at our festivals, and in our religious assemblies.

MNESIPPUS. But what do you expect them to do for you? For surely you do not sacrifice to them with the design of gaining their favour, seeing that they are dead.

TOXARIS. Perhaps it is no harm that the dead should be well-disposed towards us; but we believe, moreover, that we do a service to the living, by recalling the memory of great men and rendering them honour when they are no more. For we hold that in this wise many of our fellow-citizens will desire to imitate their example.

MNESIPPUS. Herein, indeed, you express a very sensible opinion.

*Lucian : Toxaris or Friendship.*



## ADDRESS.

THERE is hardly any subject, it seems to me, which can more worthily engage our thoughts, or is in itself more deserving of attention, than all that relates to the advent and appearance on the world's stage of those whom we are accustomed to call Great Men.

As that term, however, is liable to be somewhat vaguely used, I ought to explain that I mean by it leaders in thought, in action, in art, in science, in discovery ; and as representative names in each of these departments, I may mention Descartes, Cromwell, Rembrandt, Newton, Columbus.

Such are the men to whom, with one accord, everywhere throughout the civilized world, is applied the epithet of genius ; and who, if it were possible to classify men according to their intimate cerebral structure, or, in other words, the quality of their brains, and not according to their mere outward bodily characteristics, would deserve to be erected into a separate Order—like the Greek Heroes of old—so wide, and deep, and altogether impassable is the chasm which separates them from their fellow-men.

And if we continue to look at the subject from this point of view, it can hardly fail to strike us with surprise that there should be such men at all; and that Nature, whose chief business it is to produce what is normal, orderly, regular, should now and again—*pro hâc vice*, as we may say—take a prodigious step outside her accustomed course and bring forth these exceptional existences.

For, we must remember that Science has formulated no theory, that we have discovered no law of heredity, to account for their origin, which is in all cases as sudden and unforeseen as that of the meteor which flashes across some quarter of the heavens on a summer night.

And yet again, seeing that it is part of Nature's scheme to create these extraordinary personalities, we cannot help asking ourselves why they are so rare, why they appear so seldom—I mean, of course, in proportion to the general mass of the population? For I need not tell you that there are countries, even European countries, with millions and millions of inhabitants, which in a whole series of generations do not bring forth a single great man!

To this law of the infrequency of great men, I am aware of only one historical exception, that of ancient Greece, which in the famous century when she attained the acme of her national life and development, was actually prolific of great men. The stage of history is crowded with their names, and every succeeding age and nation, from the Roman

Empire downwards, has looked back to their incomparable excellence, as to a guiding star.

I have been led to make this casual and almost accidental reference to Greece; and before I pass altogether away from the subject, let me remind you that it is the possibility of this backward glance, it is this narrow rift—if I may so express myself—in the jealous clouds of time, revealing an all too partial view of that glorious age, and permitting some faint rays of its splendour to warm and illuminate our souls, that have made the life and fortune of the world! \*

In quite modern times, that is in the latter half of the 18th century, a country which we all know presented a somewhat parallel phenomenon—a country, too, which resembles Greece in physical configuration, a mountainous country with an extensive seaboard, like Greece limited in area, of slender material resources, and a sparse population. Of course, I am referring to Scotland; and Scotland, during the period I have named, possessed a group of men, who not only shed the most brilliant lustre on English national annals, but attained for themselves an everlasting place in the estimation and admiration of mankind.

The lives of the majority of them are admirably, though succinctly, related in the “New Calendar of Great Men,” so that here it will only be necessary for me briefly to enumerate their names, which lead by a natural transition to that of him who may be

\* See E. Renan : *Hist. du Peuple d'Israël*, Préface.

said to close the series, and the centenary of whose death we have come together this evening to commemorate.

#### HUME.

First in order of time, if not of importance, must be placed David Hume, a philosopher of the Positive type, indeed, the founder of the Positive method, statesman, historian, political economist, a great thinker, and a character of the highest moral worth and dignity.

#### ADAM SMITH.

His contemporary and intimate friend was Adam Smith, a thinker of stupendous mental powers, who achieved the rare task of carving out for himself a new and unexplored province in the realm of thought, making it all his own, and carrying it in the course of a long life, to systematic completion.

#### HUTTON.

Then there was Hutton, the founder of Scotch Geology, who first taught the theory of Metamorphic rocks, and showed the influence, previously overlooked, of heat and pressure in giving their actual form to the constituents of the earth's crust.

#### BLACK.

Black, Professor of Chemistry in Glasgow University, endowed his own Science and Physics generally with one of the most luminous and prolific ideas—the theory of latent heat, a theory from which has



sprung, in our own day, the grand generalization of the indestructibility of force.

### JAMES WATT.

The next name to which I shall venture briefly to refer, is one familiar to you all—that of James Watt, the inventor of the steam-engine, an instrument fraught with such enormous consequences to civilization. If any additional praise were needed for such a man, it will be found in the words of M. Arago, the French Astronomer, who has said that the steam-engine, produced by Watt, and the writings which he left, contained *in germ* all the improvements it has since undergone. Nor is even that Watt's sole title to fame. He likewise made the remarkable and important discovery of the composition of water, which, previous to his time, had been regarded as a simple elementary body, but which he showed to consist of the union of two gases, oxygen and hydrogen. .

### CULLEN.

I may further instance Cullen, the father of modern medicine, of whom it is enough to say, that Black was his pupil, and that the far-reaching speculations of the master served to turn the attention of the pupil to those phenomena of heat, from the investigation of which he subsequently derived the splendid theory to which I have just adverted.

## JOHN HUNTER.

In February, 1728, within a year after the death of Sir Isaac Newton, John Hunter was born at Long Calderwood, about eight miles from Glasgow. The farm-house, which belonged to the family, is still standing and well-preserved; and Hunter was the youngest of ten children, which first drew breath under its roof. His parents were in humble circumstances, but the family was well descended, an ancestor having received the small estate or farm as a gift from King Robert II. of Scotland. If anyone here present knows when that monarch flourished, he is better informed than I am, but he was doubtless a thane of considerable antiquity, though his period is not recorded in "Haydn's Dictionary of Dates."

When only ten years of age Hunter had the misfortune to lose his father, and thus fell under the exclusive guardianship of his surviving parent whom all the biographers agree rather unkindly in stigmatizing as an over-indulgent mother. They do not approve of the manner in which she brought up her youngest son, and no doubt think they could have done it much better themselves. But Mrs. Hunter's only fault seems to have been a desire to spare her favourite as much as possible the rigours of education at a time when the dominie and his rod were rampant in Scotland, when the day-school was often at a distance from the home, and had to be attended in all weathers, sometimes without the adjuncts of shoes and stockings. In this way the boy's early edu-

cation remained very incomplete, and in later life he felt the want of the elementary training he had then missed. But we may console ourselves by thinking he wore "a precious jewel in his head," which neither a schoolmaster nor even a School Board could supply—natural genius; and he probably gained more than he lost in giving himself up to country pastimes and the pursuit of Natural History in the fields, the hedgerows and the farmyard and wherever he could find objects on which to exercise his insatiable curiosity. The mother of Baron Cuvier, who was a very accomplished woman, devoted herself unreservedly to the supervision and direction of her son's education, and yet we may fairly doubt whether Cuvier, though a very great man, ever attained quite to the intellectual level of Hunter.

As to natural genius, I may just say that it was common to the whole family, his elder brother, Dr. William Hunter, being a distinguished physician here in London, who formed a museum valued at 100,000*l.*, which he subsequently bequeathed to Glasgow University; and one of his sisters was mother of the well-known Dr. Matthew Baillie, and of Joanna Baillie, the gifted authoress.

John Hunter remained virtually at the paternal home until he was twenty years of age, and in 1748, that is approximately the middle of the eighteenth century, he removed to London; not, however, as a mere adventurer, but at the invitation of his brother William, to whom I have just alluded. It may be mentioned as a feature of the time that Hunter

and the friend by whom he was accompanied took exactly a fortnight to travel from the one place to the other.

The late Mr. Thomas Henry Buckle, the famous author of the *History of "Civilization in England,"* has made use of this migration, to explain the character of Hunter's mind and genius.

His argument is, that Hunter, having lived in Scotland until his twentieth year, became imbued with the principles of the Deductive philosophy, which were at the time dominant in his native country. And then, having removed to London, to "the heart," as Mr. Buckle puts it, "of the most empirical nation in Europe," he was in turn constrained to adopt the philosophy prevalent here, and to become a student of facts, instead of principles, or, in other words, an *Inductive* philosopher. His mind being thus divided between these two opposite methods of thought is the cause, in Mr. Buckle's opinion, of the obscurity which not unfrequently marks his scientific writings. But one fears that in arguing thus, Buckle somewhat strains the case of John Hunter to give support to his favourite theory; and I am persuaded that Hunter, while in Scotland, was no more conscious of being a deductive philosopher than M. Jourdain, the hero of Molière's comedy, was of talking prose; and that the obscurity of which Mr. Buckle complains is due in some degree to the defects of early education, but far more to that scrupulous caution in drawing positive conclusions which was a natural characteristic of Hunter's mind.

## HUNTER A CABINET-MAKER.

Now whether John Hunter was, or was not, a deductive philosopher at the time of his quitting Scotland, we know that he was an expert cabinet-maker. His sister, Agnes, had married a Mr. Buchanan, who was a cabinet-maker in Glasgow—a jovial, rollicking soul, fond of a song and a glass, like his compatriot, not then born, Robert Burns, and his social qualities unfortunately proved highly detrimental to his business. Hunter, in the interest of his sister and family, went to live with them and assisted Buchanan in his business for about two years, and doubtless acquired some of that deftness and dexterity of hand, which was soon to prove so valuable in making his dissections and preparations.

## PREPARATIONS.

But very likely some of those who do me the honour of listening to me do not quite realize what is meant by the technical term “preparation”; and I ought therefore to explain that such “preparations,” when well executed, almost reach the level of works of art.

Take, for instance, the elaborate and beautiful mechanism by which the retractile claw of the tiger is projected, in order to grasp and maul its prey, and again withdrawn into its sheath, so as to render the under surface of the paw as soft and smooth as velvet. I may observe that this is a power which the tiger possesses, while the bear does not, so that



the five long toes on each of Bruin's feet actually rattle on the ground as he walks. It is a manifest disadvantage to a beast of prey to be obliged to go his rounds at night with a step as easily recognizable as that of a policeman. But I can assure you the dissection necessary to exhibit the former arrangement permanently preserved in spirit is a task demanding no ordinary skill and delicacy of touch. The same is of course still more true of the various organs of sense, especially in the smaller animals, as the eye and the internal ear, of the minute nerves, glands and absorbent vessels. Yet at the time of Hunter's death, his museum contained thousands of such "preparations."

#### HUNTER IN LONDON.

Towards the end, then, of 1748, just a year before the birth of Goethe in Frankfort, John Hunter was launched in the mighty sphere of thought and action and inspiration, which London represented then in even a higher degree than it does now ; and in which he was destined to be for forty-five years one of the most original thinkers and one of the most strenuous workers. He was a plain-featured youth, of a marked Lowland Scotch type, looking, as Mr. Carlyle afterwards said of Macaulay, as if he had been made out of oatmeal. He was uncouth in manner, swore freely, after the fashion of the time, and indulged his boisterous spirits by frequenting the shilling gallery of the theatre and helping to "damn" the

plays of unfortunate authors—a very salutary process, as a late eminent dramatic critic has declared. But in extenuation of these peccadilloes of Hunter it is only fair to remember he was not yet of age, and, as Lord Tennyson says,

If Nature put not forth her power  
About the opening of the flower,  
Who is it that could live an hour?

#### NICHOL AND GARTHSHORE.

That honest fearlessness of speech which is an unfailing characteristic of all great and noble natures, belonged in an eminent degree to Hunter, but in him it was associated with a constitutional irritability of temper, which proved very prejudicial to his influence, and must have been altogether fatal to any lesser man.

I shall best be able to illustrate the virtue and its corresponding defect by two instances. Hunter possessed a friend in Mr. Nichol, the King's printer, who occasionally assisted him with five guineas, when it became an urgent matter to buy up the carcass of some wild beast which was known to be dying at one of the neighbouring menageries, which were then much more numerous than at present. Nichol entertained peculiar ideas on the subject of bringing up his children, and thought it of great importance to strengthen their constitutions in infancy by inuring them to cold.

An old Greek author, Hierocles of Alexandria,

who calls himself a lover of laughter, but relates many pointless stories, tells one of a learned man who sought to teach his donkey not to eat, and with that object gradually withdrew the animal's food. When the natural result ensued, the master went about among his friends and relatives bemoaning the loss he had sustained, for he said that just when the donkey had become accomplished in its lesson, it died. Mr. Nichol's system, it appears, was attended with a still more tragical result, for he lost his five children in succession. A sixth was happily expected, when Hunter came on the scene and said to his friend, "Well, Nichol, are you going to kill this child along with the others?" Nichol replied, as he well might, "What do you mean?" which led Hunter into a dissertation on the temperature of the hen's nest and of her callow brood, and convinced his friend of the importance of warmth to the young animal—a theme which has since been greatly enlarged upon and become the subject of a classical treatise by the veteran physiologist, M. Milne Edwards.

The second instance to which I have referred is this. There was in those days a certain fashionable physician—Dr. Garthshore—whose name still lingers in the social records of the period, who affected to take an interest in Hunter, and occasionally dropped in at his lectures and fell asleep. On one occasion he entered the apartment where Hunter was busily at work on a preparation, and drawing near exclaimed somewhat effusively, "Ah,



dear John Hunter," to which Hunter looking up, and parodying the accents of the speaker, replied, "Ah, dear Tom Fool."

I believe it was Lord Aberdeen who said of the late Sir Robert Peel, "Peel is not a pleasant horse to go up to in a stable," and doubtless at this moment, Dr. Garthshore must have realized the same feeling, even if he hadn't the wit to give expression to it in a *bon mot*. But it isn't a judicious thing to tell a fashionable physician to his face that he's a fool, for however contemptible and intolerable the individual fool may be, he has always numerous associates, who are warmly in sympathy with him, and glad of the opportunity of avenging their common wrongs. Shelley's widow had too much reason to exclaim, "If you wish for peace in this world, learn not to think for yourself, but to think as others think."

#### HUNTER'S ISOLATION.

This unfortunately proved to be, in a very serious sense, Hunter's fate, even up to the last hour of his life, which it is humiliating to reflect was directly sacrificed to the persistent hostility of his colleagues. He held an isolated position, and was out of sympathy with the main body of his professional brethren. He paid the inevitable penalty, as so many before him have done, of being in advance of his time. The practical men, so-called, pooh-poohed him, and denounced his minute physiological researches as

out of place, and having no relation to practical surgery: though, at the time, not one of them understood the nature of the process by which a broken bone, or a ruptured tendon is repaired; nor had any one, before Hunter, even attempted to study the nature of inflammation, which is the universal phenomenon of all injured structure.

### EDWARD JENNER.

To this general want of appreciation, however, there existed one delightful exception, in the case of another famous investigator, Edward Jenner. Jenner was just half Hunter's age, and became his pupil when they were respectively twenty-one and forty-two.

Subsequently, as many people know, Jenner settled in Gloucestershire, at the quaint and primitive village of Berkeley, which stands immediately under the shadow of the grand old Norman keep, where Edward the Second died, Berkeley Castle. Berkeley also possesses a beautiful medieval church, which the late Mr. Freeman greatly admired, and considered to be one of the finest in England; and I was glad to see, when I visited the place in August last, that Jenner's name was commemorated, not only by a tablet, but by a very rich painted glass window.

No sooner had he settled there, than Hunter laid him under contribution for a variety of facts and objects in the domain of Natural History. First, it

was a long and difficult investigation into the habits of the cuckoo, which satisfactorily settled the question of that bird's peculiar mode of incubation.

Again, we find Hunter writing to his friend :—

“I am told there is the skin of a toad in Berkeley Castle, that is of prodigious size. Let me know the truth of it, its dimensions, what bones are still in it, and if it can be stolen by some invisible being.” The latter seems a startling proposal to make to a young doctor newly settled in a respectable neighbourhood; but it is quite in the way of collectors, who will beg, borrow, appropriate, or even buy any isolated object which may be necessary to complete their acquisitions.

Hunter was devoured by this passion for “collecting” and acquiring knowledge throughout his life and it is amusingly illustrated in his correspondence with Jenner. The latter, after he had been for some years in practice at Berkeley, formed the natural and appropriate design of taking a wife, and he had fixed his affections on a young lady of family and position in the district, to whom he judged that his suit would not be unacceptable. It is abundantly clear, however, that he did not bring to the study of this young lady the same degree of *acumen* which he had exercised to such good effect in the examination of the cuckoo's nest. Perhaps the subject was more difficult; but it turned out that he was completely mistaken in the idea he had formed, and he received a cruel rebuff for his pains.

As he was a person of very sensitive disposition,

he felt the disappointment acutely, and craving for sympathy, he wrote and confided his sorrow to his old friend and master. The latter rejoined with a few appropriate words, but immediately added, "Let her go, never mind her, I shall employ you with hedgehogs." And thereupon he gives the wounded lover minute directions for a series of experiments to be carried out during the winter on a number of unfortunate hedgehogs. I suppose this is the only instance in which an eminent surgeon has been led to prescribe hedgehog as a remedy for the tender passion, but it had apparently the desired effect, for the very next letter from Hunter begins with the words "Received yours with the eel." And so, on the unromantic basis of hedgehogs, eels, and a variety of other curious creatures, the friendship of those two illustrious men was maintained, and a painful reminiscence obliterated.

But in adducing these anecdotes with the object of illustrating one side of Hunter's character, I have necessarily been anticipating, and I must now return to the period when we left him as an assistant to his brother in the Anatomical School, in Great Windmill Street.

#### HUNTER'S HEALTH BREAKS DOWN.

After labouring there assiduously for ten years, his health began to suffer, and as not uncommonly happens in cases of depressed vital power, induced by the unhealthy emanations of the dissecting-room,

he had an attack of inflammation of the lungs. The consequences of this illness gave rise to serious apprehensions, as his eldest brother, James, who had also given proofs of marked ability, had died of consumption. Under these circumstances, John Hunter was advised to leave London for a time, and seek a more southerly climate. What did he do? He applied for an appointment in the army—it was then the period of the Seven Years' War—and embarked in a powerful armament sent out under Keppel to lay siege to Belleisle, an island off the western coast of France. The siege was short, but sanguinary, and thus afforded him the desired opportunity of studying gun-shot wounds, the knowledge which he thus acquired serving as the basis of all future scientific treatment of such injuries.

#### LANDS IN PORTUGAL.

He next accompanied the forces to Portugal, and found time while there to make important studies of the fauna, as well as of the geological features of that country. The latter subject gave rise to a paper which he read before the Royal Society, and as its history throws a curious side-light on the character of the times, and affords another proof of the chivalrous independence which marked Hunter's character, I think it may be worth relating to you.

#### "MANY THOUSAND CENTURIES."

After the paper had been duly accepted and read,



the misgivings of the authorities mainly responsible for the publications of the Royal Society, were excited by some expressions which Hunter had used. He had stated, for instance, that certain changes on the earth's surface which he had observed could only have been produced in "many thousand centuries," and he thereupon received a very polite letter from the Secretary of the Royal Society, pointing out that the expression would be found very objectionable by the generality of readers, and submitting to him that he should drop the "centuries," and be content with saying "many thousand years," which would have the happy effect of bringing the statement within the limits of Biblical chronology.

You see, at this time, Moses held the field as an authority on geological questions, and no other agency than the Noachian deluge was recognized as a cause of change on the earth's surface,

But, in spite of the blandishments and specious reasons put forth by the Royal Society's secretary, Hunter stood firm; and rather than alter what he had written and believed to be true, he submitted to the exclusion of his paper from the Society's transactions altogether.

### METHOD OF THIS ADDRESS.

You will perceive that what I have aimed at in this address is, to present the subject of it, not as an isolated figure, but in his true relation to a great group of intellectual Scotchmen. Then I attempted

to give you some idea of the character of the man personally ; and it still remains for me to speak of him as a philosopher and a great scientific surgeon. In the former capacity—as a thousand witnesses testify—the keynote of his character was colossal industry and power of application ; inexhaustible patience in the investigation of natural problems ; constant diffidence and modesty in making positive assertions ; and an immense range of interests and sympathies. Hunter was no specialist ; not the man to shut himself up intellectually within the restricted area of some corner of the animal kingdom—that of the *coleopterous* or *lepidopterous* insects, for example.

On the contrary, he was gifted with a profound sense of the unity and interdependence of all parts of Nature ; and no object, within her ample realm, was too small, or too great, to engage his attention. The temperature of growing vegetables, the dynamic force of the sap as it rose in the trunk and branches of the tree, the forms of crystals, the nature of colours, were all investigated. His favourite study, carried on at intervals for twenty years, was the domestic bee and the economy of the hive. One of his chief treatises is upon the family of Cetacea, or whales, and he actually employed at his own expense a surgeon to go out in a whaler to the Polar regions, in order to add to our knowledge of those huge mammalia.

In fact, no one, since Aristotle, had taken so wide a sweep in the domain of natural science, or wrought

and wrestled, as he did, with its obscure and difficult problems. In the course of his busy life he had dissected upwards of five hundred different species, exclusive of individuals, and exclusive, too, of a large number of plants. The results of these labours are embodied in the noble collection which now forms the Museum of the Royal College of Surgeons, and which Hunter himself estimated to have cost him some 70,000*l*.

His works on the Teeth, on the Blood, on Inflammation, on Gun-shot wounds, on the Principles of Surgery, are each a classic; and his name is indissolubly associated with one of the chief and most beneficent operations—which I will endeavour briefly to make clear to you.

#### POPLITEAL ANEURISM.

One of the most formidable and painful diseases incident to the human body is aneurism. It is liable to occur in various situations, but that particular variety with which we are concerned has its seat in the ham, or the hollow space which may be felt at the back of the knee joint; and is called popliteal aneurism.

It has its origin in disease of the inner coat or lining of the large femoral artery, which traverses the popliteal space on its way downward to supply the leg and foot with blood. The unsound spot in the inner coat of the vessel may not be larger at first than a pin's head, but the stream of blood,



which is being incessantly pumped over it by the heart's action, makes its way, at first in small quantity, but gradually in an increasing amount, between the other coats of the artery, separating and distending them in the process. This is usually attended with great pain.

When the enlargement is first detected externally beneath the skin, it may not be larger than a pigeon's egg; but it invariably goes on increasing; soon attains the size of a hen's egg, then that of a small orange, and finally grows to the bulk of the closed hand. It thus forms a large *pulsating* tumour in the ham, producing, through the pressure it makes on the surrounding nerves, unendurable agony, only to be allayed by enormous doses of opium.

Before Hunter made his great discovery, the remedy practised by all surgeons—foreign and English—was to open this tumour, evacuate the contents, and put a ligature upon the artery, above and below the seat of disease. But this severe procedure was attended, in a large majority of cases, by a fatal result, so that it came to be thought safer to amputate the entire limb—a terrible, and hardly less dangerous, alternative!

It was in these circumstances that Hunter devised his famous operation, which was the immediate means of saving thousands of lives and putting an end to a perfect hell of human suffering. In what did it consist? Simply in exposing the artery where it lay near the surface high up in the thigh,

tying a ligature round it, and thus cutting off the entire stream of blood which maintained the aneurismal tumour!

But, you may ask, had it never occurred to any other surgeons to adopt that device? Doubtless it had, but they were effectually deterred from practising it by the fear that, in thus intercepting the supply of blood, they should produce mortification of the limb.

#### HUNTER KNEW BETTER.

But Hunter's philosophic mind knew better. In the course of his endless and unwearied investigation of Nature's laws, he had been led to examine the mode of growth of the stag's horn. The order of cervidæ, or deer, unlike other ruminants, annually shed their horns, and while the new antlers are growing, they are enveloped in a soft, thick, dark membrane, which is called "the velvet," from its close resemblance to that tissue. This "velvet" coat is highly vascular, i.e. it carries a number of blood vessels to nourish the young horn, which it closely invests, and it is as warm to the touch as any other part of the animal's body. When the growth of the antlers is complete, it shrivels up, and at that stage you may often see it partially detached, hanging in ragged strips from the head, and the deer are then constantly rubbing their horns against trees and other objects in order to expedite its removal.

Hunter caused a stag to be caught in Richmond Park when the velvet was in full development, made an incision in the skin of the neck, and tied the carotid artery on one side. The velvet covering the horn soon became cold, showing that its supply of blood had been cut off. The animal was then released. In a few days it was captured again and examined, when Hunter found, to his unbounded surprise, that the horn had resumed its customary temperature, and was just as warm as before. What had happened? Perhaps the ligature on the carotid artery had failed of its effect and allowed the blood to pass unchecked. To ascertain this the stag was killed, when the ligature was found intact, and the artery completely blocked.

How, then, had the blood supply made its way to the horn? By what is technically called the collateral circulation, i.e. the small branches given off by the artery, in its course, had become enormously enlarged—in obedience to what Hunter termed the “stimulus of necessity”—and carried a sufficient supply of blood to the parts beyond the ligature.

Of course you now perceive that the problem of curing popliteal aneurism is solved. Hunter had a patient in St. George's Hospital who was suffering cruelly from this disease. He laid before the man the two alternatives of opening the sac of the aneurism, or amputating the limb, and explained their attendant dangers. He then added, “If you will allow me to make a slight incision in your thigh, I think I can cure you.” The patient submitted, and

a ligature was applied to the main artery, when the pain immediately ceased and the tumour collapsed. The limb, of course, at first grew cold; but warmth returned gradually and naturally, and in a few days the patient walked out of the hospital cured.

I have thus endeavoured to bring before you a few of the more prominent features in the character and history of this great man, who may justly be said to be the representative of natural science in the eighteenth century, as Mr. Darwin has been in the nineteenth. Time, which is fatal to so many pretensions, has served only to enhance the reputation of Hunter; and it is a mere truism to say that his fame now stands immeasurably higher than it did a hundred years ago. It would almost seem as if the lapse of a long period had been needed to enable the human mind to grow familiar with the full extent of his discoveries, and to penetrate to the solid basis on which his far-reaching speculations rest.

